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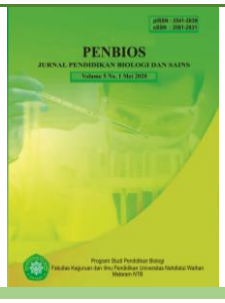

*Research Article*

# Analysis of The Use of Mobile Phones in Studying Biology by Students in The Village of Suralaga, East Lombok Regency

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**ABSTRACT**

This study aims to analyze the use of mobile phones in learning biology among students in Suralaga village, Suralaga sub-district, East Lombok district. The focus of the research includes: (1) the effect or impact of the use of cell phones, (2) the intensity and time of using cell phones, and (3) the application of the use of cell phones in learning biology. This study uses a descriptive qualitative approach. The population in this study was 120 students, and the sample of respondents in this study was 36 students, consisting of three levels of education, namely elementary, junior high, and high school. The results showed that mobile phones were very influential in making it easier for students to find new learning methods. The impact of using cell phones includes: helping students to work on assignments and adding insight into science, social interaction, and student environment becoming ignorant of each other, cellphone addiction causes students to concentrate less on learning, forget time, and feel annoyed if someone interrupts him playing his cellphone. Students are said to be cellphone addicts because they use cell phones for a long duration, the intensity of using cellphones in a day is up to ≥ 6 hours day and their use is more often used in the afternoons – evenings, the application form of using cellphones in learning biology is looking for Latin terms, looking for videos biology learning and so on.



## INTRODUCTION

Currently, the world is entering the era of the industrial revolution 4.0 or the fourth world industrial revolution where technology has become the basis of human life. Everything becomes borderless and unlimited due to the development of the internet and digital technology. This era has influenced many aspects of life in the fields of economy,

politics, culture, art, and even education (Destiana, 2019). To face the era of the industrial revolution 4.0, education is needed that can form a creative, innovative and competitive generation. This can be achieved one way by optimizing the use of technology as an educational tool which is expected to be able to produce output that can keep up with or change the times for the better (Suwardana, Hendra, 2017). The relationship between the world of education and the industrial revolution 4.0 is that the world of education is required to keep up with technological developments that are developing rapidly and must utilize information and communication technology to expedite the learning process. In addition, it is hoped that there will be a change in the mindset of learning from being focused on the teacher (teacher centered) to being focused on students (student centered). The quality of education can be improved by; 1) integrating technology into the classroom, 2) using relevant media and learning methods, 3) making the best use of school facilities and facilities, 4) improving the teaching and learning process, 5) improving and developing skills for teachers and students, especially in creativity and innovate, 6) increase students' creativity, tenacity and ability, 7) adapt learning methods to students' wishes so that students can prefer learning (Suprapto, 2012).

In the era of the industrial revolution 4.0, the world of education is required to utilize technology or technology products as learning aids so that it is expected to produce output that can keep up with or change the times for the better. One form of this technology product is mobile phones (mobile phones) which are easy to find for use in Indonesia among all groups, including students. The positive impact of using cellphones for students in the school environment, namely: students can use cellphones as learning media to make it easier to obtain broader information related to the material being taught by the teacher (Kursiwi, 2016). While the negative impact is a change in student/individual behavior in the form of students preferring to play mobile phones rather than learning which causes time to be lost and interferes with learning concentration (Prastowo, 2018). Problems that are often experienced by students include having habits (playing cellphones, games, social media, etc.) so that children become lazy to learn, and this is where difficulties will arise in learning. The low results of learning achievement for students will make it difficult to take the next level of education and the quality of students. Currently, many children spend most of their time playing cellphones at home rather than playing outside the home for a long time. Excessive use of mobile phones for students sometimes often causes problems in the learning process so that students rely more on mobile phones than having to study (Manumpil, 2015).

As for previous research related to continuous or continuous use of mobile phones, it will have a negative impact on children's behavior patterns in their daily lives, children who tend to constantly use mobile phones will be very dependent and become activities that children must and routinely carry out in their daily activities - Today, it is undeniable that currently children play mobile phones more often than learn to interact with their surroundings, this is worrying, because during their childhood they are still unstable, have a very high sense of curiosity and have an effect on increasing consumptive nature in children. For this reason, the use of mobile phones in children needs special attention for parents. Several cases regarding the negative impact of mobile phones often affect

children. Starting from internet addiction, games, and also pornographic content (Titik, 2015).

The intensity of using a cell phone is a measure or length of time using a cell phone. The long duration of playing cellphones can already be said to be addiction. With a long enough duration, it indicates that students really need cellphones in their daily lives. Students who use such a size are not a problem if they are used to do tasks such as looking for Latin terms in studying biology, looking for species names and so on, in contrast to students who use cellphones for a long time to do things that are not useful and use cellphones. also inseparable from the applications offered, various applications make students forget time with other activities. This can make students negligent and forget about other work. Mobile is useful for students if it is used for learning purposes. Mobile phones can be connected to internet services that will help students find information that can help their knowledge at school. However, in reality very few students take advantage of this side. The cellphones they have are generally used for texting, playing games, listening to music, watching audiovisual shows, and Facebooking. Furthermore, it will have an impact on their learning achievement at school (Initial Observations in Suralaga Village, 2020). The purpose of this study was to determine the effect or impact of mobile phone use, the intensity and timing of mobile phone use, and the application of mobile phone use in studying biology among students in Suralaga village.

## METHOD

This research was conducted in Suralaga Village, which is located in Suralaga District, East Lombok Regency, West Nusa Tenggara Province. The reason for choosing this location is because apart from being an easy-to-reach research location, students in Suralaga village also play cellphones more often than study and most of their time is spent playing cellphones, excessive use of cellphones often causes problems for students such as: problems in the learning process so that it is not uncommon for students to rely more on mobile phones than having to study, and because the respondents in this study were all students in Suralaga village starting from the elementary, middle and high school levels, so if the respondents were in one area it would certainly make it easier for researchers to conduct research . This study uses a type of qualitative research. Qualitative research places more emphasis on understanding and meaning, is closely related to certain values, places more emphasis on process than measurement, describes, interprets and gives meaning and is not sufficient with mere explanation, and interprets multi-methods in research (Nana Syaodin Sukmadinata, 2012) .

The steps of the research design carried out in this study are as follows: Studying the influence or impact of using cellphones, the intensity and time of using cellphones, and the application of using cellphones in learning biology for students, making observations that aim to find out important things that related to research to be used as input, determining the research sample, in this case the parties who were sampled were students in the village of Suralaga. The sample is determined based on the formula n = 30% x N, so the number of samples used is 36 students. Of the 120 students in Suralaga village, both from elementary, junior high and high school levels, there were very few who had the opportunity to attend to fill out the questionnaire, so the researchers took a sample of 36

students consisting of 12 elementary school students, 12 junior high school students, and 12 high school students, distributed questionnaires, completed questionnaires were then distributed to respondents to obtain accurate results, data collection and processing. Questionnaires that have been completed by respondents are collected and processed to obtain accurate results, data analysis is carried out at a later stage, namely by analyzing the results of data collection. The analysis is attempted in depth enough to obtain valid and relevant conclusions (Santoso, 2013) conclusions and suggestions. Conclusions are obtained based on the results of data processing and analysis, while suggestions are suggestions for mobile phone users and future researchers. In this study the research instruments used included observation and distribution of questionnaires. Observations made in this study were a series of direct observations in the village of Suralaga, a questionnaire made by the researcher in the form of a list of questions and statements made to a number of respondents to get answers to the statements put forward. The questionnaire used in this study included two types of questionnaires, namely closed questionnaires and a combination of open and closed questionnaires or also called semi-open questionnaires. Closed questionnaires provide alternative answers that have been determined by the questionnaire maker, namely agree, disagree, strongly disagree, and are in the form of multiple choices so that respondents do not have the opportunity to fill in their own answers. In addition to closed questionnaires, this study also used a questionnaire in the form of a combination of open and closed questionnaires. In the questionnaire there are statements that have prepared answers, but there are also alternative options for respondents to make their own answers to express their opinions if the answer choices provided do not have the answer the respondent wants.

## RESULTS AND DISCUSSION

Mobile is an innovation from the latest technology with better capabilities and the latest features that have more practical and useful purposes and functions. In this study, the respondents used by the author were students in the village of Suralaga from elementary, junior high and high school levels. It is known that most of them already have mobile phones and it is not uncommon to find students playing mobile phones more often than studying and playing with friends. peers. Respondents who received the questionnaire filled out the questions and provided an assessment of the statements contained in the questionnaire. Questionnaire results that have been returned will be re-elected to obtain a sample from the population represented by 36 respondents, after which the questionnaire results will be analyzed and calculated.

Table 1. Data of Respondents by Education Level

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 83,34 | 8,33 | 8,33 |
| Junior high school | 83,33 | 16.67 | 0 |
| Senior high school | 91,67 | 8,33 | 0 |

In this finding, there are respondents' responses to questions that have been given regarding the use of cellphones in studying biology for students in the village of Suralaga.

**The Influence or Impact of Mobile Phone Use in Biology Studying**

The use of mobile phones greatly influences the activities carried out by students both positively and negatively. the positive effect is that it makes it easier for students to find information, for example the existence of a mobile phone makes it easier for students to find new learning methods. There are new learning methods, which make it easier for students and teachers in the learning process. With advances in technology, new methods are created that make students able to understand abstract material, because this material with the help of technology can be made abstract, and can be easily understood by students (West Prakoso, 2019). As in the following table.

Table 2. Respondents' Answers Regarding Facilitating Students to Find Learning Methods

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 83,34 | 8,33 | 8,33 |
| Junior high school | 83,33 | 16.67 | 0 |
| Senior high school | 91,67 | 8,33 | 0 |

Based on Table 2 above, it can be seen from the level of education that the highest respondent who answered agree was at the SMA level, namely with a percentage of 91.67%, and the lowest respondent answered strongly disagree, namely at the SD level with a percentage of 8.33%. So, it can be concluded that the use of mobile phones in studying biology for students in the village of Suralaga, namely in terms of facilitating students in finding new learning methods, namely the use of mobile phones, greatly influences students.

Table 3. Percentage of Respondents' Answers Regarding the Influence of Using Mobile Phones to Do Assignments and Increase Knowledge About Science

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 66,66 | 16,67 | 16,67 |
| Junior high school | 58,33 | 25 | 16,67 |
| Senior high school | 66,66 | 16,67 | 16,67 |

Based on Table 3 above, it can be seen from the education level that the highest respondents who answered agree were at the SD and SMA levels with a percentage of 66.66%, and the lowest respondents answered strongly disagree, namely at the SMP level with a percentage of 16.67%. In this study students were more dominant in making positive use of mobile phones where students were more dominant in answering in

agreement regarding the use of mobile phones as a medium for doing assignments and adding insight into knowledge especially in learning biology rather than disagreeing and even strongly disagreeing, this is because Students do not only make cellphones as learning media but also as a means of communication, entertainment and so on.

Table 4. Percentage of Respondents' Answers Regarding the Effect of Mobile Phone Use on Lack of Sleep due to Mobile Use

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 16,67 | 50 | 33,33 |
| Junior high school | 58,33 | 16,67 | 16,67 |
| Senior high school | 50 | 25 | 25 |

Based on Table 4 above, it can be seen that the majority of junior high school students (58.33%) and high school students (50%) agree that sleep time is reduced due to the use of mobile phones than elementary students (16.67%). This is because students are already dependent on cellphones so they are willing to use their sleep time to play cellphones instead of having to sleep or rest, this is one form of the negative impact of using cellphones. As for elementary students who answered disagree 50% and strongly disagree 33.33%. Middle school students who answered disagreed 25% and strongly disagreed 16.67%. While high school students who answered disagreed 25% and strongly disagreed 25%. This is because they don't use cellphones too much, so their sleep time doesn't decrease because they are able to limit between sleeping time and playing cellphones.

Table 5. Percentage of Respondents' Answers Regarding the Effects of Using Mobile Phones Due to Addiction Causing Less Concentration in Studying

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 41,67 | 41,67 | 16,67 |
| Junior high school | 50 | 41,67 | 8,33 |
| Senior high school | 75 | 16,67 | 8,33 |

Based on table 5 above, it can be seen that most junior high school students (50%) and high school students (75%) agree that cellphone addiction causes a lack of concentration in learning, this is because students are too engrossed with cellphones, involve cellphones in every activity, don't able to control, unable to reduce or stop using mobile phones, causing students to concentrate less on learning. As for those who answered disagree between SMP (41.67%) and SMA (16.67%), and those who answered strongly disagreed between SMP and SMA students were the same at 8.33%. This is because students do not use cellphones too often so they are able to control themselves to

reduce or stop using cellphones, so this does not cause a lack of concentration in learning. Meanwhile, elementary school students who agreed and disagreed were the same, namely around 41.67%, 16.66% strongly disagreed. This is because students are able to manage between playing mobile phones properly with concentration in learning.

Table 6. Percentage of Respondents' Answers Regarding the Effect of Using a Mobile Phone Causing Forgetting Time When Using a Mobile Phone

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 25 | 50 | 25 |
| Junior high school | 33,33 | 50 | 16,67 |
| Senior high school | 33,33 | 41,67 | 25 |

Based on Table 6 above, it can be seen that most elementary school students (50%), junior high school (50%), and high school students (41.57%) disagree about forgetting the time when using mobile phones, this is because students are able to manage time as well as maybe between dividing study time by playing cellphones. As for a small portion of students who answered strongly disagree by 25% (SD), 16.67% (SMP), and 25% (SMA), this is because students prefer learning rather than playing mobile phones so no time is wasted - drain. As for the students who answered yes in SD (25%), SMP (33.33%), and SMA (33.33%), this is because students are dependent or addicted to using mobile phones, causing them to forget the time when using them.

Table 7. Percentage of Respondents' Answers Regarding the Effect of Using a Mobile Phone It's easy to feel irritated if someone disturbs you when you're engrossed in playing your cellphone

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Agree | Disagree | Totally disagree |
| Elementary school | 41,67 | 41,67 | 16,66 |
| Junior high school | 41,67 | 33,33 | 25 |
| Senior high school | 41,67 | 41,67 | 16,66 |

Based on Table 7 above, it can be seen that most elementary, junior high and high school students agree that around 41.67% feel annoyed if someone disturbs them when they are engrossed in playing mobile phones. This is because students experience addiction or dependency on cellphones, causing students to feel annoyed or irritable when someone disturbs them playing cellphones. As for some of the responses of students who answered disagree at the junior high school level by 33.33%, students who answered strongly disagreed 25%, at the high school level who answered disagreed 41.67%, students who answered strongly disagreed 16.66%, while at elementary school students who answered disagree 41.67%, students who answered strongly disagreed 16.66%. This research is in line with research that has been conducted by (Puji Asmaul Chusna, 2016) regarding the

influence of mobile media on the development of children's character where playing mobile phones continuously causes dependence, so they will quickly feel irritated if someone interferes with them when they are engrossed in playing mobile phones.

**Intensity and Time of Mobile Phone Usage in Biology Study**

The intensity of cellphone use is a measure or length of time using a cellphone. On average, students in Suralaga Village use their cellphones the longest, which is more than ≥6 hours per day. The use of mobile phones is inseparable from the applications offered so that various applications make students forget the time with other activities.

Table 8. Percentage of Respondents' Answers Regarding the Intensity and Time of Use of Mobile Phones in a Day - a day

| Education level | Respondents Answer (%) | | | |
|---|---|---|---|---|
| | 1-2 jam | 2-4 jam | 4-6 jam | ≥6 jam |
| Elementary school | 41,67 | 33,33 | 8,33 | 16,67 |
| Junior high school | 16,67 | 16,67 | 25 | 41,66 |
| Senior high school | 25 | 16,67 | 16,67 | 41,66 |

Based on Table 8. above, it can be seen that students in Suralaga Village on average use mobile phones the longest, which is more than ≥6 hours per day. This can be seen from the highest percentage of junior and senior high school students at 41.66%. This is because students are demanded by their needs, such as looking for school assignments such as in biology lessons, or other information and entertainment. With a long enough duration, ranging from 4-6 hours, it indicates that the respondent really needs a cellphone in their daily life. Respondents use cellphones of this size, because of demands to do assignments, watch YouTube, play games and so on. This can be seen in the percentage of elementary school students at 8.33%, junior high school students at 25% and high school students at 16.67%. A long duration of using a cellphone can be said to be an addiction, because this can make the respondent negligent and forget about other work, the respondent will not be able to be away from the cellphone so that it has become a necessity. There are also other opinions, namely respondents using mobile phones 2-4 hours per day, namely elementary students at 33.33%, junior high schools 16.67%, and high school students at 16.67%. Students use cellphones for a short duration because students are not dependent on cellphones. The use of mobile phones for 1-2 hours per day is 41.67% for elementary school students, 16.67% for junior high schools, and 25% for high school students. This is because students use it according to the needs they need.

This is in line with research which states that the majority of students use mobile phones for ≥ 6 hours. The intensity of mobile phone use is inseparable from the applications offered. Various applications make students forget the time with other activities. The results of the study are in line with the statement (Severin and Tankared, 2015) that mobile phones can cause gratification in students.

Table 9. Percentage of Respondents' Answers Regarding the Intensity and Time Often Using Mobile Phones

| Education level | Respondents Answer (%) | | | |
|---|---|---|---|---|
| | Morning-afternoon | Afternoon-evening | Evening-night | Night-morning |
| Elementary school | 16,67 | 66,66 | 16,67 | 0 |
| Junior high school | 8,33 | 33,33 | 41,67 | 16,67 |
| Senior high school | 16,67 | 8,33 | 50 | 25 |

Based on Table 9. above, it can be seen that students in Surlaga Village use mobile phones, when viewed from the opinion of the highest respondents it is seen that 66.66% is most often used, namely during the afternoon - evening where this time is most dominantly used by elementary students, as for junior high school students 33.33% and high school students 8.33%. Students use that time to find school assignments or find entertainment on their cellphones. There is also another opinion that students use mobile phones in the morning and afternoon, namely elementary school students as much as 16.67%, junior high school 8.33%, and high school students 16.67%. Students use cellphones in the morning because they often use them for things related to school work. During the afternoon and evening, there were 16.67% of elementary school students, 41.67% of junior high schools, and 50% of high school students. Usually in the evenings it is used to open more entertainment applications and to do tasks. And at night, there were 16.67% of junior high school students, and 25% of high school students, while there were no elementary school students, this was because students who often used mobile phones at night tended to socialize on media and play games.

This research is in line with research (Rahman Fauzan and Fitria, 2018) which states that students show the most frequent online learning time is at night, namely at 18-24 hours, this corresponds to a percentage of 59.03%.

## Application of Mobile Phones in Biology Learning

Table 10. Percentage of Respondents' Answers Regarding the Application of Mobile Phones in Learning Biology

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Search for the meaning of the Latin term | Search for species name | Searching for biology learning videos |
| Elementary school | 16,67 | 33,33 | 50 |
| Junior high school | 25 | 25 | 50 |
| Senior high school | 50 | 16,67 | 33,33 |

Based on Table 10 above, it can be seen that in terms of studying biology students often use mobile phones to look for biology learning videos as is the case for students in

Suralaga Village, namely 50% elementary school, 50% middle school, and 33.33% high school. Furthermore, looking for the meaning of the Latin term in this case is more dominantly used by high school students by 50% than elementary school students (16.67%) and junior high school (25%) due to the large number of Latin/scientific terms at the high school level which have not been understood so that in the application of learning biology Mobile phones are used to look up the meaning of Latin terms and as other sources of information. The form of mobile phone application in learning biology is to look for species names, in this case elementary school students are more dominant, namely 33.33% compared to junior high school students (25%) and high school students (16.67%).

Table 11. Percentage of Respondents' Answers Regarding the Application of Mobile Phones in Biology Learning Related to Frequently Used Applications

| Education level | Respondents Answer (%) | | | | |
|---|---|---|---|---|---|
| | Blogspot | Wikipedia | Mozila/firefox | Youtube | Google chrome |
| Elementary school | 8,33 | 8,33 | 33,33 | 33,33 | 16,68 |
| Junior high school | 0 | 8,33 | 16,67 | 25 | 50 |
| Senior high school | 8,33 | 8,33 | 16,67 | 41,67 | 25 |

Based on Table 11. above, it can be seen that in learning biology, students more often use the Google Chrome application for their learning. In this case junior high school students are more dominant in using google chrome by 50% than elementary students 16.68%, and high school students 25%. This is because Google Chrome can be accessed easily and is very familiar to use, Google Chrome can be used to access the things you want because the scope of Google Chrome is very wide. There are also other opinions such as using the YouTube application, this application is more dominantly used by high school students as much as 41.67%, junior high school students 25%, and elementary school students 33.33%. This is because the application can make it easier for students to understand learning material that is not understood when delivering material in class by the teacher. The use of the mozila/firefox application, this application is more dominantly used by elementary school students as much as 33.33%, junior high school 16.67%, and high school 16.67%, students who use mozila/firefox because on the basis of the wishes and convenience of each student, Students will use the application if it can make it easier for them to find information. Overall use of Wikipedia is 8.33%, the Wikipedia application is very popular with students because the application quickly displays the information that users want. The use of blogspot as a whole is 8.33%, this is because students use blogspot to get information because the application provides a wide variety of information that its users want.

This research is in line with research (Nurul Hikmah, 2020). The results of his research reported that by using Google Chrome to search for learning resources and information, respondents could find reference materials for papers and books in other

forms such as files, pdf, Microsoft Word and PowerPoint examples as presentation materials in class.

Table 12. Percentage of Respondents' Answers Regarding the Application of Mobile Phones in Biology Learning to Search for Latin Terms

| Education level | Respondents Answer (%) | | |
|---|---|---|---|
| | Search for the meaning of the Latin term | Search for species name | Searching for biology learning videos |
| Elementary school | 16,67 | 50 | 33,33 |
| Junior high school | 25 | 33,33 | 41,67 |
| Senior high school | 25 | 58,34 | 16,66 |

Based on Table 12. above, it can be seen that mobile phones are very helpful for students in learning biology, especially looking for Latin names for both assignments and practicum reports. In this study, it was found that high school students answered disagree more dominantly by 58.34% than elementary school students (50%) and junior high school students (33.33%). This is because students not only use mobile phones to search for Latin terms but also use them as a means of communication, learning media, means of entertainment and so on. As for the answers, the elementary students agreed about 16.67%, 25% for junior high schools, and 25% for high schools. This is due to the dependence of students on using cellphones so that they have to look for anything or browse via cellphones. The answers of students strongly disagree were more dominantly answered by junior high school students around 41.67%, elementary school 33.33% and high school 16.66%, this is because students are not dependent on using mobile phones so students think that looking for Latin terms does not have to use mobile phones but you can also search for Latin terms using a biology dictionary or other supporting books.

## CONCLUSION

The use of mobile phones greatly influences the activities carried out by students both positively and negatively. The negative impact affects student study time where students prefer to play mobile phones rather than study. It has an impact on social interaction and the student environment where many students become ignorant, ignoring meetings and being together with relatives or family, they are too busy with their respective cellphones. The impact of addiction to using mobile phones which makes students less concentrated in learning, often forgets the time and easily gets annoyed if someone disturbs them playing cellphones. Regarding the intensity and time of using mobile phones in studying biology for students in Suralaga Village, the duration of using mobile phones is more than ≥ 6 hours per day and the most frequent time using mobile phones is during the afternoon - evening. The form of mobile phone application in learning biology is that students often use cellphones to search for biology learning videos and look for the meaning of Latin terms, the application that students often use to study is “Google Chrome”.

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